AMENDMENT

In the claims:

1. (Previously Presented) In a data-over-cable system, a method for optimizing data throughput on an upstream channel at a target packet error ratio, the upstream channel providing data transmissions from a plurality of cable modems to a cable modem termination system, the method comprising the steps of:

ascertaining a signal-to-noise ratio on the upstream channel;

determining parameters for data transmissions by the cable modems on the upstream channel, wherein the determined parameters are associated with the signal-to-noise ratio and the target packet error ratio;

negotiating the use of the determined parameters in the upstream channel;

recognizing a substantial variance in the signal to noise ratio;

ascertaining whether the variance in the signal-to-noise ratio is consistent over a given number of transmission cycles, and if so,

determining new parameters for data transmission on the upstream channel, wherein the new parameters are associated with the variance in the signal-to-noise ratio; and

negotiating the use of the new parameters in the upstream channel.

2. (Original) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of Claim 1.

3. (Original) The method of Claim 1 wherein the target packet error ratio is selected by a user.

4. (Original) The method of Claim 1 wherein the target packet error ratio is a default value.

5. (Original) The method of Claim 1 wherein the ascertaining step is performed on the cable modem termination system.

6. (Original) The method of Claim 1 wherein the ascertaining step comprises:

scheduling a plurality of quiescent periods on the upstream channel wherein no data is transmitted by the cable modems on the upstream channel;

measuring a noise floor value on the upstream channel during one of the quiescent periods; and

converting the measured noise floor value to the signal-to-noise ratio.

7. (Original) The method of Claim 1 wherein the ascertaining step comprises:

scheduling a plurality of quiescent periods on the upstream channel wherein no data is transmitted by the cable modems on the upstream channel;

measuring noise floor values on the upstream channel during the quiescent periods;

averaging the measured noise floor values to obtain an average noise floor value; and

converting the average noise floor value to the signal-to-noise ratio.

8-11. (Cancelled)

12. (Original) The method of Claim 1 wherein the determined parameters are also associated with a payload size for a data transmission from one cable modem.

13. (Original) The method of Claim 12 wherein the determined parameters are selected from a group consisting of symbol rate, modulation type, or error correction levels.

14. (Original) The method of Claim 13 wherein the modulation type is a Quadrature Amplitude Modulation type.

15. (Original) The method of Claim 13 wherein the error correction levels are selected from a group consisting of Forward Error Correction level or Forward Error Correction data coverage size.

16. (Original) The method of Claim 1 wherein the negotiating step comprises:

building an Upstream Channel Descriptor message based on the determined parameters; and

sending the Upstream Channel Descriptor message to the cable modems.

17. (Original) The method of Claim 1 further comprising:

reconfiguring the cable modems to transmit data according to the determined parameters.

18-27. (Cancelled)

28. (Previously Presented) In a data-over-cable system, a method for optimizing data throughput on an upstream channel at a target packet error ratio, the upstream channel providing data transmissions from a plurality of cable modems to a cable modem termination system, the method comprising the steps of:

ascertaining a signal-to-noise ratio on the upstream channel;

determining parameters for data transmissions by the cable modems on the upstream channel, wherein the determined parameters are associated with the signal-to-noise ratio and the target packet error ratio;

negotiating the use of the determined parameters in the upstream channel;

measuring a payload size for a selection of data transmissions on the upstream channel, wherein the upstream channel comprises a plurality of data transmissions;

recognizing a substantial variance in the payload size;

ascertaining whether the variance in the payload size is consistent over a given number of transmission cycles, and if so,

determining new parameters for data transmission on the upstream channel, wherein the new parameters are associated with the variance in the payload size; and

negotiating the use of the new determined parameters in the upstream channel.

29. (Previously Presented) The method of Claim 28, wherein the selection of data transmissions is associated with a single Interval Usage Code.

30. (Previously Presented) The method of Claim 28, wherein the target packet error ratio is a default value.

31. (Previously Presented) The method of Claim 28, wherein the ascertaining step comprises:

scheduling a plurality of quiescent periods on the upstream channel wherein no data is transmitted by the cable modems on the upstream channel;

measuring a noise floor value on the upstream channel during one of the quiescent periods; and

converting the measured noise floor value to the signal-to-noise ratio.

32. (Previously Presented) The method of Claim 28, wherein the determining step comprises:

ascertaining a payload size for a data transmission;

reading the parameters for the data transmission on the upstream channel from a table, wherein the determined parameters in the table are associated with the signal-to-noise ratio, the target packet error ratio, and the payload size.

33. (Previously Presented) The method of Claim 28, wherein the determined parameters are also associated with a payload size for a data transmission from one cable modem.

34. (Previously Presented) The method of Claim 33, wherein the determined parameters are selected from a group consisting of symbol rate, modulation type, or error correction levels.

35. (Previously Presented) The method of Claim 28 further comprising:

reconfiguring the cable modems to transmit data according to the determined parameters.

36. (Previously Presented) In a data-over-cable system, a method for optimizing data throughput on an upstream channel at a target packet error ratio, the upstream channel providing data transmissions from a plurality of cable modems to a cable modem termination system, the method comprising the steps of:

ascertaining a signal-to-noise ratio on the upstream channel;

determining parameters for data transmissions by the cable modems on the upstream channel, wherein the determined parameters are associated with the signal-to-noise ratio and the target packet error ratio;

negotiating the use of the determined parameters in the upstream channel;

measuring a packet error ratio for a selection of data transmissions on the upstream channel;

recognizing a substantial variance in the measured packet error ratio without a corresponding change in the signal-to-noise ratio or a payload size for a selection of data transmissions;

ascertaining whether the variance in the measured packet error ratio is consistent over a given number of transmission cycles, and if so,

adjusting a Forward Error Correction level of the data transmission to compensate for the variance.

37. (Previously Presented) The method of Claim 36, wherein the selection of data transmissions is associated with a single interval usage code.

38. (Previously Presented) The method of Claim 36, wherein the target packet error ratio is a default value.

39. (Previously Presented) The method of Claim 36, wherein the ascertaining step comprises:

scheduling a plurality of quiescent periods on the upstream channel wherein no data is transmitted by the cable modems on the upstream channel;

measuring a noise floor value on the upstream channel during one of the quiescent periods; and

converting the measured noise floor value to the signal-to-noise ratio.

40. (Previously Presented) The method of Claim 36, wherein the determining step comprises:

ascertaining a payload size for a data transmission;

reading the parameters for the data transmission on the upstream channel from a table, wherein the determined parameters in the table are associated with the signal-to-noise ratio, the target packet error ratio, and the payload size.

41. (Previously Presented) The method of Claim 36, wherein the determined parameters are also associated with a payload size for a data transmission from one cable modem.

42. (Previously Presented) The method of Claim 41, wherein the determined parameters are selected from a group consisting of symbol rate, modulation type, or error correction levels.

43. (Previously Presented) The method of Claim 36, further comprising:

reconfiguring the cable modems to transmit data according to the determined parameters.

44. (Previously Presented) In a data-over-cable system, a method for optimizing data throughput on an upstream channel at a target packet error ratio, the upstream channel providing data transmissions from a plurality of cable modems to a cable modem termination system, the method comprising the steps of:

ascertaining a signal-to-noise ratio on the upstream channel;

determining parameters for data transmissions by the cable modems on the upstream channel, wherein the determined parameters are associated with the signal-to-noise ratio and the target packet error ratio;

negotiating the use of the determined parameters in the upstream channel;

ascertaining a payload size for a data transmission;

reading the parameters for the data transmission on the upstream channel from a table, wherein the determined parameters in the table are associated with the signal-to-noise ratio, the target packet error ratio, and the payload size; and

predetermining the table entries for a given payload size, wherein predetermining the table entries comprises (i) generating all combinations of parameters and signal-to-noise ratios, (ii) calculating a packet error ratio and data throughput for each combination, and (iii) determining whether the calculated packet error ratio for the combination is less than the target packet error ratio, and if so (iv) determining whether the data throughput for the combination is the greatest, and if so, (v) creating the entry in the table comprising the value of the generated signal-to-noise ratio for the combination, the target packet error ratio, and the generated parameters for the combination.

45. (Previously Presented) The method of Claim 44, wherein the step of calculating the packet error ratio for the combination comprises the steps of:

calculating a bit error ratio for the combination;

converting the bit error ratio to a byte error ratio for the combination;

converting the byte error ratio to a codeword error ratio for the combination; and

converting the codeword error ratio to the packet error ratio for the combination.